

Trend Study 00-3-01

Study site name: Garden Springs Flat South.

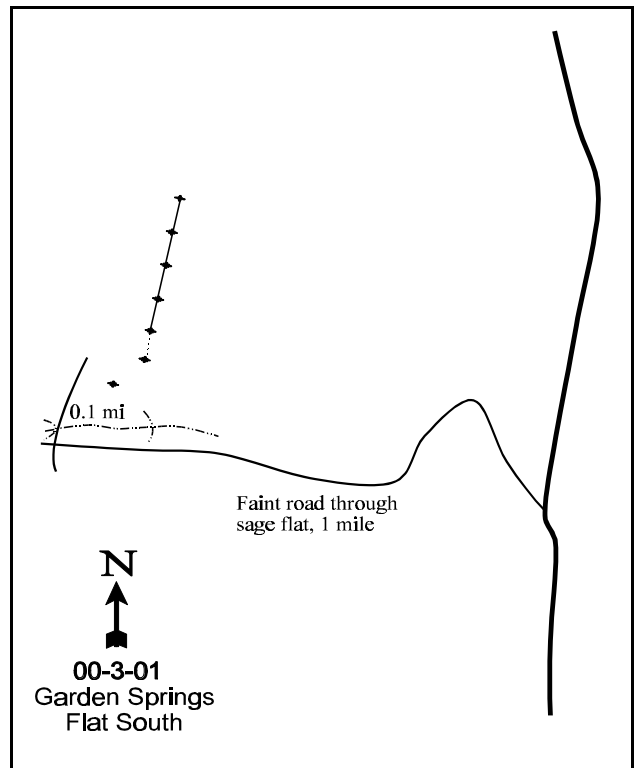
Vegetation type: Annual Grass.

Compass bearing: frequency baseline 14 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (35ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). Rebar at 1ft on all belts.

LOCATION DESCRIPTION

From the main gate on Antelope Island, travel south for 9.1 miles to a faint road on the right, walk up the road for 1.0 mile to where a road crosses the gully. Travel 0.1 mile from the gully to the witness post on the east side of the road. The baseline runs 14 degrees magnetic. The 0 foot stake is marked with browse tag number 172.



Map Name: Antelope Island

Diagrammatic Sketch

Township 2N, Range 3W, Section 4

UTM 4532576 N 400161 E

DISCUSSION

Trend Study No. 00-3

The Garden Springs Flat South study is located about 1/4 mile south of Garden Creek on the east side of Antelope Island about 1 mile east of the shoreline. The site slopes gently (5-10%) to the northeast at an elevation of about 4,640 feet. A fire burned through the site between the 1995 and 1996 readings. A pellet group transect read in association with the vegetation transect in 2001 estimated 44 bison days use/acre (109 bison days use/ha). There was also an indication of light use by bighorn sheep.

Soil textural analysis indicates it to be a sandy clay loam with a neutral pH (6.6). The soil is moderately deep and dark with an estimated effective rooting depth of 23 inches. Very little rock was encountered within the soil profile. Average soil temperature was 57°F at 20 inches. Erosion is not a problem with vegetation and litter covering nearly the entire soil surface.

As with most of the other range trend studies on the island, fire has eliminated nearly all the browse in this area. Only broom snakeweed was encountered in any sampling period. This species is in low abundance with an estimated density of less than 100 plants/acre in all years.

Grass composition has been dominated by two annual species in the past, cheatgrass and rattail fescue. Both species combined to provide nearly half of the total vegetation cover in 1995 and 1996. In 2001, rattail fescue dramatically decreased in nested frequency, quadrat frequency and percent cover. Although cheatgrass showed a decrease in nested frequency in 2001, it still remains abundant and was sampled in nearly every quadrat (98%). Perennial grasses are dominated by 2 low value species, purple three-awn and bulbous bluegrass, both of which increased in nested frequency in 2001. Two desired perennial grasses, Sandberg bluegrass and sand dropseed, are present but infrequent.

Forbs are also dominated by weedy annual and perennial species. Storksbill is the dominant forb in both frequency and cover in 2001. Other weedy species, such as prickly lettuce, yellow salsify and moth mullein were abundant in previous readings, but due to low precipitation in 2000-2001, these species have greatly reduced abundances. Sum of nested frequency of all perennial forbs declined by 81% in 2001. Some utilization of yellow salsify was apparent in 1996. Few desirable perennial species are present at this time.

1996 TREND ASSESSMENT

Soil trend is stable with no erosion apparent. Vegetative cover has declined slightly since 1995, while all other cover values have remained relatively the same. The browse trend is stable with few plants encountered and little change in their respective densities. Annual weeds provide rigorous competition with browse species and will likely prohibit the population from expanding. The herbaceous understory is dominated by annual and weedy species. Cheatgrass and rattail fescue dominate the grasses on the site, although there are some perennial species still in the community. Forb composition is shifting but still remains poor. Even if fire is suppressed on the site, it will be extremely difficult to change the composition of the community. Herbaceous trend is stable at this time but composition is very poor.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable but with very poor composition (3)

2001 TREND ASSESSMENT

Trend for soil is stable. Vegetation and litter cover remain high, and erosion is minimal. Browse is nearly non-existent on this study due to short fire intervals. Therefore, a trend is not applicable at the present time. Broom snakeweed is the only shrub species sampled on the site and has an estimated density of less than 100 plants/acre in all years. Desirable shrubs, primarily sagebrush, have very little chance to establish and persist on this site due to the extreme fire hazard and high competition with annual species. Trend for the herbaceous understory is slightly up, but remains in poor condition. Perennial grasses increased in sum of nested frequency, although much of this increase is due to purple three-awn and bulbous bluegrass, both lower value species. Sum of nested frequency of annual grasses decreased which is also a positive step. Perennial forbs decreased in sum of nested frequency. However, forbs are much less abundant than grasses and most of the perennial forbs are weeds.

TREND ASSESSMENT

soil - stable (3)

browse - n/a

herbaceous understory - slightly up (4)

HERBACEOUS TRENDS --

Herd unit 00 , Study no: 3

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %		
		'95	'96	'01	'95	'96	'01	'95	'96	'01
G	Aristida purpurea	_a 203	_b 266	_c 303	73	90	92	6.98	9.07	26.89
G	Bromus japonicus (a)	-	-	4	-	-	1	-	-	.00
G	Bromus tectorum (a)	_{ab} 436	_b 463	_a 416	96	99	98	18.07	20.18	19.46
G	Festuca myuros (a)	_b 270	_c 379	_a 153	67	88	45	14.43	18.01	1.11
G	Poa bulbosa	_a 157	_a 120	_b 271	49	36	77	2.10	3.58	12.21
G	Poa secunda	_b 65	_a 43	_c 103	24	21	35	.14	.28	1.01
G	Sporobolus cryptandrus	_a 49	_b 139	_a 37	19	54	15	.11	.69	.10
G	Vulpia octoflora (a)	8	-	2	2	-	1	.01	-	.00
Total for Annual Grasses		714	842	575	165	187	145	32.52	38.19	20.58
Total for Perennial Grasses		474	568	714	165	201	219	9.35	13.62	40.24
Total for Grasses		1188	1410	1289	330	388	364	41.88	51.82	60.83
F	Agoseris heterophylla	_b 123	_b 126	_a 9	46	45	3	.43	.35	.01
F	Ambrosia psilostachya	-	-	6	-	-	2	-	-	.06
F	Astragalus cibarius	-	3	-	-	1	-	-	.01	-
F	Aster spp.	_b 8	_c 17	_a -	2	5	-	.03	.07	-
F	Calochortus nuttallii	_b 34	_a 4	_b 37	17	1	23	.08	.00	.11
F	Cirsium undulatum	1	4	8	1	3	5	.01	.33	.39
F	Descurainia pinnata (a)	_b 24	_a -	_a -	9	-	-	.04	-	-
F	Draba nemorosa (a)	_b 115	_a 3	_a -	37	1	-	.26	.00	-
F	Erodium cicutarium (a)	_c 459	_a 311	_b 388	99	92	94	26.47	3.29	13.95

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %		
		'95	'96	'01	'95	'96	'01	'95	'96	'01
F	Erigeron divergens	a-	b ₂₅	a ₃	-	13	1	-	.11	.15
F	Grindelia squarrosa	a-	b ₁₈	a-	-	9	-	-	.15	-
F	Heterotheca villosa	a-	b ₈	ab ₃	-	5	1	-	.05	.03
F	Holosteum umbellatum (a)	b ₃₁	a-	c ₂	10	-	2	.07	-	.03
F	Lappula occidentalis (a)	b ₁₃	a-	a-	5	-	-	.02	-	-
F	Lactuca serriola	b ₅₄	c ₁₁₆	a-	24	44	-	.17	1.37	-
F	Lychnis drummondii	-	-	3	-	-	1	-	-	.03
F	Machaeranthera spp	b ₁₅	b ₁₈	a-	7	11	-	.03	.08	-
F	Tragopogon dubius	b ₆₀	c ₂₆₃	a ₁₂	21	83	5	.11	3.10	.07
F	Verbascum blattaria	a ₅	b ₁₃₄	a ₂₃	4	49	15	.02	2.40	1.25
F	Zigadenus paniculatus	50	46	48	23	25	24	.62	.62	2.33
Total for Annual Forbs		642	314	390	160	93	96	26.88	3.29	13.98
Total for Perennial Forbs		350	782	152	145	294	80	1.53	8.67	4.45
Total for Forbs		992	1096	542	305	387	176	28.41	11.97	18.44

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 00 , Study no: 3

T y p e	Species	Strip Frequency			Average Cover %		
		'95	'96	'01	'95	'96	'01
B	Gutierrezia sarothrae	2	1	2	-	.00	.06
Total for Browse		2	1	2	0	0.00	0.06

BASIC COVER --

Herd unit 00 , Study no: 3

Cover Type	Nested Frequency			Average Cover %		
	'95	'96	'01	'95	'96	'01
Vegetation	498	497	496	69.59	64.01	72.55
Rock	34	11	-	.09	.02	0
Pavement	-	89	60	0	.50	.12
Litter	499	500	467	69.98	69.05	42.34
Cryptogams	1	45	-	.00	.18	0
Bare Ground	68	126	108	.98	1.14	2.08

SOIL ANALYSIS DATA --

Herd Unit 00, Study no: 03, Garden Spring Flat South

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
23.0	57.2 (19.7)	6.6	54.7	24.0	21.3	1.8	13.4	185.6	.4

PELLET GROUP FREQUENCY --

Herd unit 00 , Study no: 3

Type	Quadrat Frequency			Pellet Transect	
	'95	'96	'01	Pellet Groups per Acre 01	Days Use per Acre (ha) 01
Bighorn Sheep	-	-	-	9	N/A
Deer	-	5	-	-	-
Bison	5	12	7	531	44 (109)

BROWSE CHARACTERISTICS --

Herd unit 00 , Study no: 3

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	20			1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
M	95	3	-	-	-	-	-	-	-	-	3	-	-	60	6	9	3	
	96	4	-	-	-	-	-	-	-	-	4	-	-	80	11	14	4	
	01	2	-	-	-	-	-	-	-	-	2	-	-	40	9	10	2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'95		00%			00%			00%			+50%							
'96		00%			00%			00%			-50%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'95	60	Dec:	-			
												'96	80		-			
												'01	40		-			